

TYPE 301

Solid State FUNCTION GENERATOR



TYPE 301 FUNCTION GENERATOR. Here's an all solid state Function Generator that simultaneously produces four separate outputs. Three of the outputs are fixed amplitude square, triangle, and sine waveforms. The fourth output (MAIN) is switched to provide any of the three waveforms, with adjustable amplitude. The 301 is a reliable high frequency Function Generator for use in circuit design, equipment checkout and calibration, and in quality control applications.

OPTIONAL MAIN OUTPUT DC LEVEL CONTROL.

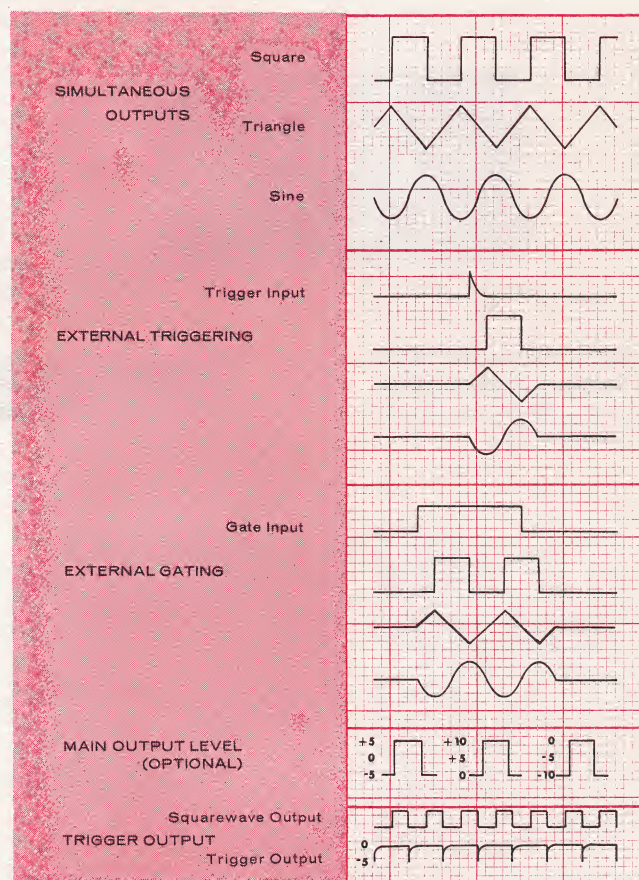
This optional addition to the 301 provides a front panel control which enables the main output waveform dc level (center of square, triangle, and sine waveforms) to be adjusted between -5 and +5 volts or in the switched position, set to approximately 0 volts.

SIMULTANEOUS OUTPUTS. All of the outputs are simultaneous and synchronized throughout the frequency range. Phase relationship is unique in that the triangle and sine waveform peaks occur at the rise and fall points of the square waveform.

EXTERNAL TRIGGERING/GATING. The 301's flexibility is best demonstrated when operated in the externally-triggered mode. In this mode, one trigger pulse produces one complete cycle at all outputs, simultaneously. A pushbutton permits manual triggering of the outputs for one-shot applications. Triggered waveforms are adjustable (timing controls) from 1 microsecond to over 16 minutes duration. Also, gated operation is available. In this mode, all outputs are simultaneously generated while the input gate-level is present, with automatic last cycle completion when the input gate-level is removed.

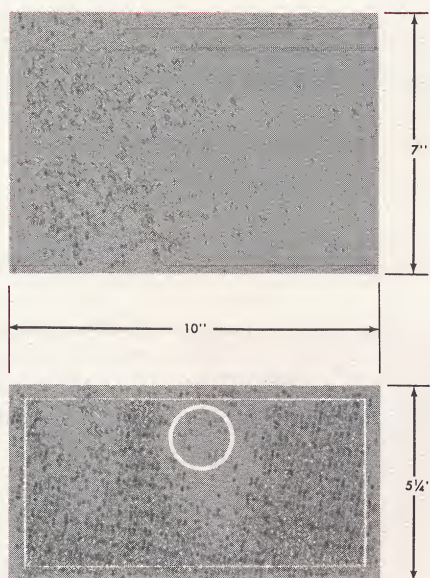
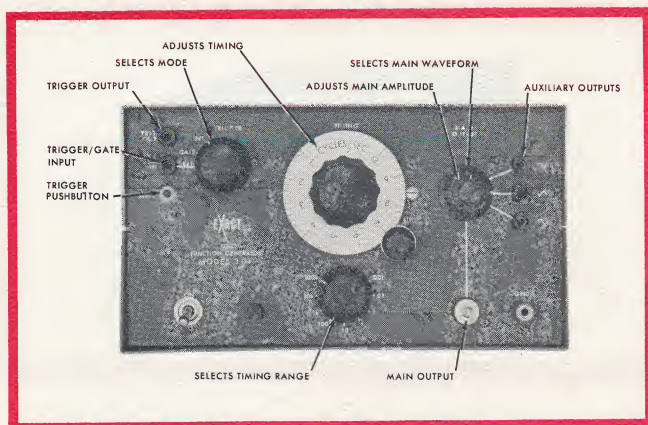
PACKAGING. The 301 is approximately 5-1/4" high by 10" wide, and weighs only eight lbs net. Front panel is dark grey in color, with silkscreened white callouts. Cabinet is medium grey. All exterior finishes are oven baked for durability.

- * ALL SOLID STATE
- * 10 NANOSECOND RISETIME
- * SIMULTANEOUS OUTPUTS
- * SQUARE-TRIANGLE-SINE
- * 0.001 cps to 1mc-ALL WAVEFORMS
- * 10 volts P-P into 52 ohms
- * TRIGGERED & GATED MODES



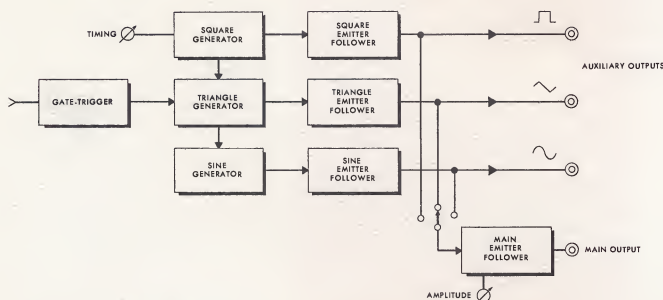
EXACT ELECTRONICS INC.

455 S.E. 2nd Avenue, Hillsboro, Oregon 97123



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TENTATIVE SPECIFICATIONS

OUTPUT FREQUENCY

Frequency Range.... 0.001 cps to 1 megacycle (9 ranges)
Indicated Frequency Accuracy..... Within 3% of absolute
Frequency Stability..... Short term (10 min.) 0.1%
..... Long term (24 hrs.) 1%
Frequency Response (Sine)..... Within 0.2 db to 100 kc
..... 0.5 db to 1 mcs

AUXILIARY OUTPUT

Amplitude (All Waveforms)... 12 v P-P min. into 500 ohms
Output Impedance..... Terminated at 500 ohms
DC Reference Level..... 10 volts fixed ± 10 mv

NOTE: The Auxiliary output is current protected.

MAIN OUTPUT

Amplitudes (All Waveforms)... At least 10 v P-P (variable)
..... into 52 ohms
Output Impedance..... Terminated at 52 ohms
DC Reference Level..... 0 volts fixed ± 10 mv
Hum and Noise..... Greater than 80 db down
DC Stability
Short term (10 min.) Long term (24 hrs.)
Square..... ± 15 mv ± 30 mv
Triangle..... ± 15 mv ± 30 mv
Sine..... ± 25 mv ± 50 mv
Amplitude Stability..... Short term (10 min.) 0.2%
..... Long term (24 hrs.) 2%

SQUARE WAVEFORM

Risetime..... 10 nanosecs or faster
Symmetry..... 99% to 100 kcs, 98% to 1 mcs
Overshoot..... 2% max. (correctly terminated)
Drop..... 2% max. (correctly terminated)

TRIANGLE WAVEFORM

Linearity..... 99% to 100 kcs, 98% to 1 mcs
Symmetry..... 99% to 100 kcs, 98% to 1 mcs

SINE WAVEFORM

Distortion..... Less than 1.5% to 20 kcs
..... Less than 2.5% to 1 mcs

TRIGGERING and GATING

Trigger or Gate Signal..... On + 5 volts (approx.)
..... Off + 2 volts (approx.)
Maximum Gate Signal..... + 30 volts
Gate Repetition Rate..... 990 kcs (max)

NOTE: The above measurements are made after a min. warm up time of 10 minutes.

TRIGGER OUTPUT

Waveshape.... Differentiated squarewave (negative-going)
Timing..... Coincident with squarewave output
Risetime..... 50 nanoseconds (max)
Amplitude..... 5 volts peak (min)
Source Impedance..... 300 ohms

POWER REQUIREMENTS

Line Voltage..... 95 to 130 or 190 to 260 v ac
Line Frequency..... 50 to 400 cps
Power..... Less than 15 watts

PHYSICAL CHARACTERISTICS

Weight..... 6 lbs. net, 13 lbs. gross
Volume..... 0.2 cu. ft. gross
Dimension..... 10 w x 5-1/4 h x 7 d

PRICE FOB FACTORY

Cabinet Model (301)..... \$550.00
Rack-Mounting Model (301 RM) \$550.00
Adjustable DC Reference Level Option..... \$ 25.00



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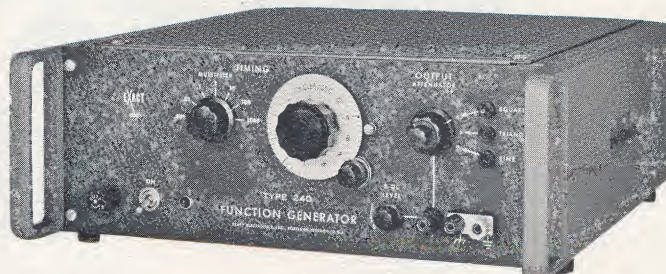
455 S.E. 2nd Avenue, Hillsboro, Oregon 97123

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Prices and specifications subject to change without notice.

TYPE 240 FUNCTION GENERATOR



TYPE 240 FUNCTION GENERATOR

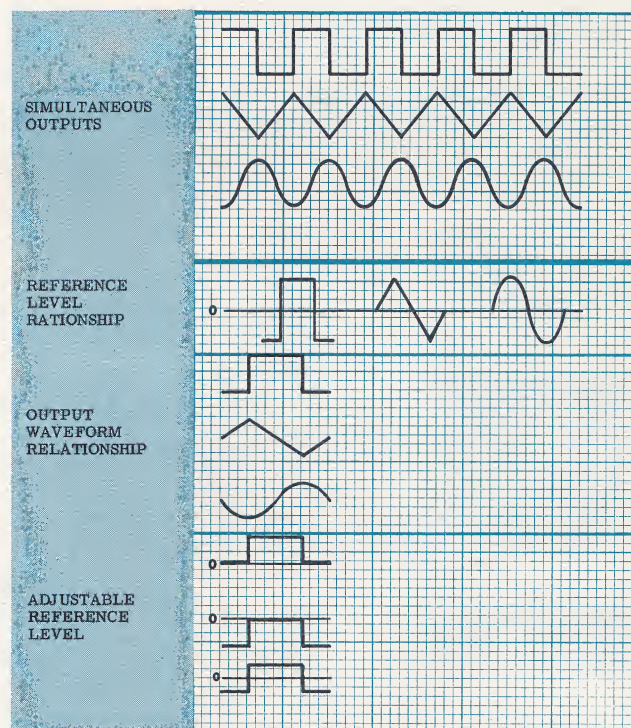
TYPE 240 FUNCTION GENERATOR. Here's a Function Generator that simultaneously produces four separate outputs. Three of the outputs are fixed amplitude square, triangle, and sine waveforms. The fourth output (MAIN) is switched to provide any of the three waveforms, with adjustable amplitude and reference level. The 240 is a reliable general purpose Function Generator for use in circuit design, equipment checkout and calibration, and in quality control applications.

SIMULTANEOUS OUTPUTS. All outputs of the 240 are simultaneous and synchronized throughout the frequency range. Phase relationship is unique in that the triangle and sine waveform peaks occur at the rise and fall points of the square waveform.

MAIN OUTPUT REFERENCE LEVEL. The main output reference level control enables the output waveform reference level (center of triangle, sine and square) to be shifted between -15 and +15 volts or, in the switched position, set to approximately 0 volts. Also, circuit ground can be either strapped to chassis ground or left isolated.

PACKAGING. The 240 is 5-1/4" high by 15-1/2" wide, and weighs only 18 lbs. net. The 240 can be supplied in rackmount version (240RM) at no additional cost. Front panel is dark grey in color, with silkscreened white callouts. End bells and cabinet are medium grey. All exterior finishes are oven baked for durability.

- * SIMULTANEOUS OUTPUTS
- * SQUARE - TRIANGLE - SINE
- * 300mv to 25 volts P-P
- * 0.001cps to 10kc

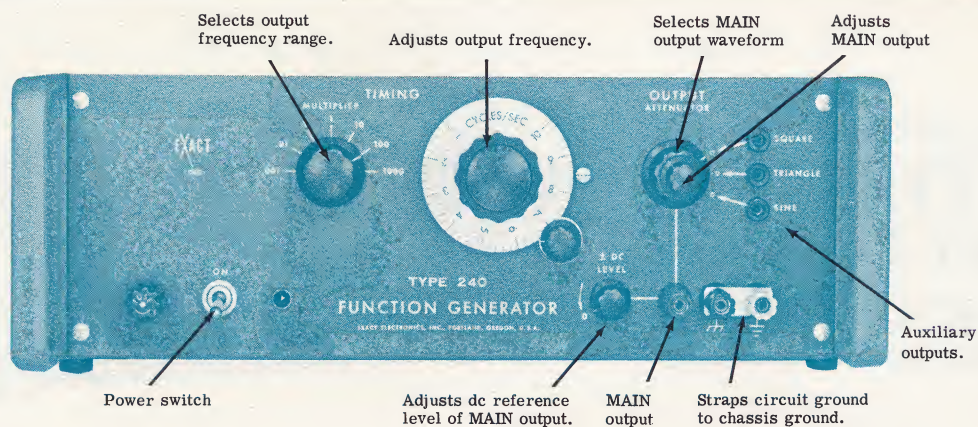


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SPECIFICATIONS

MAIN OUTPUT

Amplitude*..... 300 mv to 25 volts P-P (min)
 25 volts into 5K load
 Stability/Repeatability
 50 mv (10 min), 150 mv (24 hrs)
 Amplitude Change with Frequency 0.5% to 1kc
 1% to 10kc
 Amplitude Change with Function 1% max
 DC Reference Level

Range*.... -15 to +15 volts or switched to 0 volts
 Frequency Range 0.001 cps to 10 kc
 Frequency Deviation from Absolute 3% max
 Long Term Frequency Stability $\pm 1\%$

POWER REQUIREMENTS

Line Voltage..... 105 to 125 or 200 to 250 vac
 Line Frequency..... 50 to 400 cps
 Power 125 watts

PHYSICAL CHARACTERISTICS

Weight 18 lbs net, 25 lbs gross
 Volume 2 cu ft gross
 Dimensions 15-1/2w X 5-1/4h X 13d

SQUARE WAVEFORM

Risetime 5 usecs or faster
 Symmetry 99.5%
 Overshoot 1% max
 Droop 1% max

TRIANGLE WAVEFORM

Linearity 99.5%
 Symmetry 99.5%

SINE WAVEFORM

Total Distortion.. Less than 2% over entire freq. range

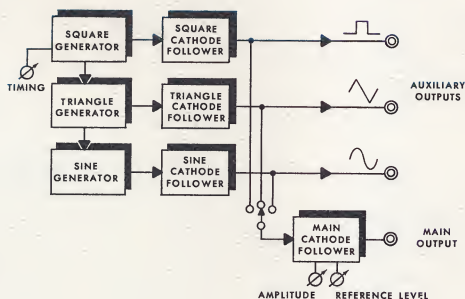
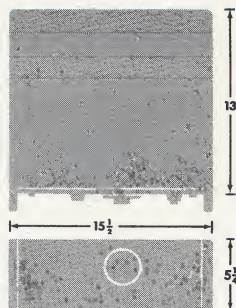
AUXILIARY OUTPUTS

Amplitude*..... 30 volts P-P (min)
 30 volts into 7K
 Stability/Repeatability (same as main)
 Amplitude Change with Frequency .. (same as main)
 DC Reference Level..... 0 volts (fixed)
 Frequency Range Synchronized with main

* Max Current..... 15 ma @ +15 vdc reference level
 3 ma @ -15 vdc reference level

PRICE

F.O.B. Factory \$475.00



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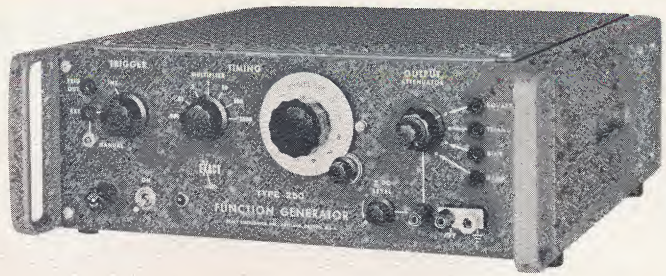
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TYPE 250 FUNCTION GENERATOR



TYPE 250 FUNCTION GENERATOR

TYPE 250 FUNCTION GENERATOR

Here's a Function Generator that can be externally triggered, and produces six separate outputs simultaneously. Four of the output waveforms - square, triangle, sine and ramp - are fixed amplitude auxiliary outputs. The fifth output (Main) is switched to provide any one of the four function-waveforms with adjustable amplitude and dc reference level. The sixth output is a trigger-output signal for use by associated equipment. In externally triggered mode, one input trigger pulse produces one complete cycle at all six outputs, simultaneously. The Exact Type 250 is a dependable, general purpose instrument, ideal for use in circuit design, equipment checkout and calibration, quality control, and other production and systems applications.

SIMULTANEOUS OUTPUTS

All outputs of the 250 are simultaneous and synchronized throughout the entire frequency range of the generator. Phase relationship is unique in that the triangle and sine waveform peaks occur at the rise and fall points of the square waveform.

MAIN OUTPUT

The main output is switched to any one of the four function waveforms and provides amplitude adjustment from 300mv to over 25 volts p-p. Dc reference level is adjustable from -15 to +15 volts, and is referenced to chassis ground or, by removing a strap, can be referenced to circuit ground which is then isolated from the chassis.

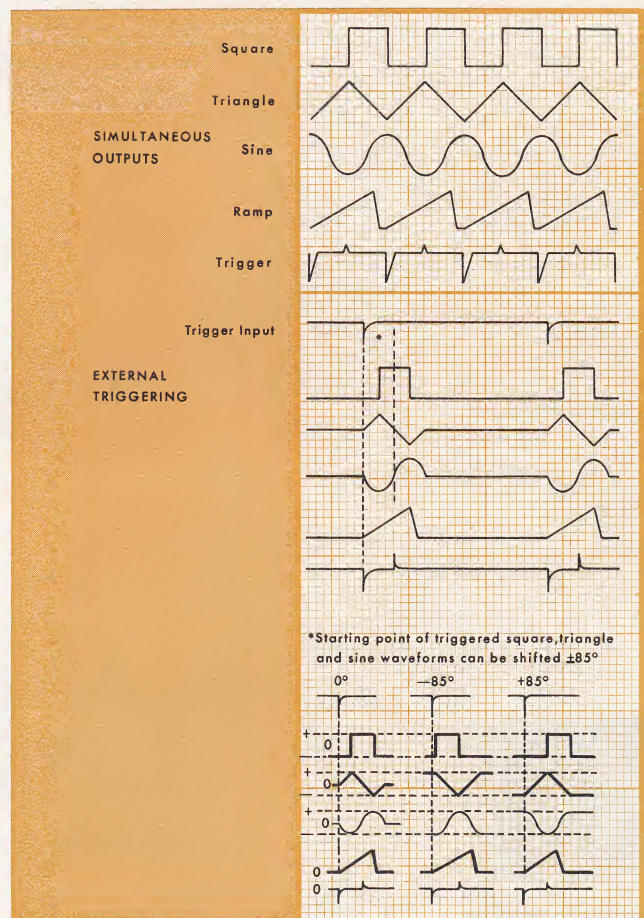
EXTERNAL TRIGGERING

The 250's flexibility is best demonstrated when operated in the externally-triggered mode. In this mode, one trigger pulse produces one complete cycle at all outputs, simultaneously. A pushbutton permits manual triggering of the outputs for oneshot applications. Triggered waveforms are adjustable (timing controls) from 100 usecs to over 16 minutes duration. Also, the starting point of triggered waveforms (all except ramp) can be shifted $\pm 85^\circ$ (internal adjustment) as shown in the illustration at right.

PHYSICAL CHARACTERISTICS

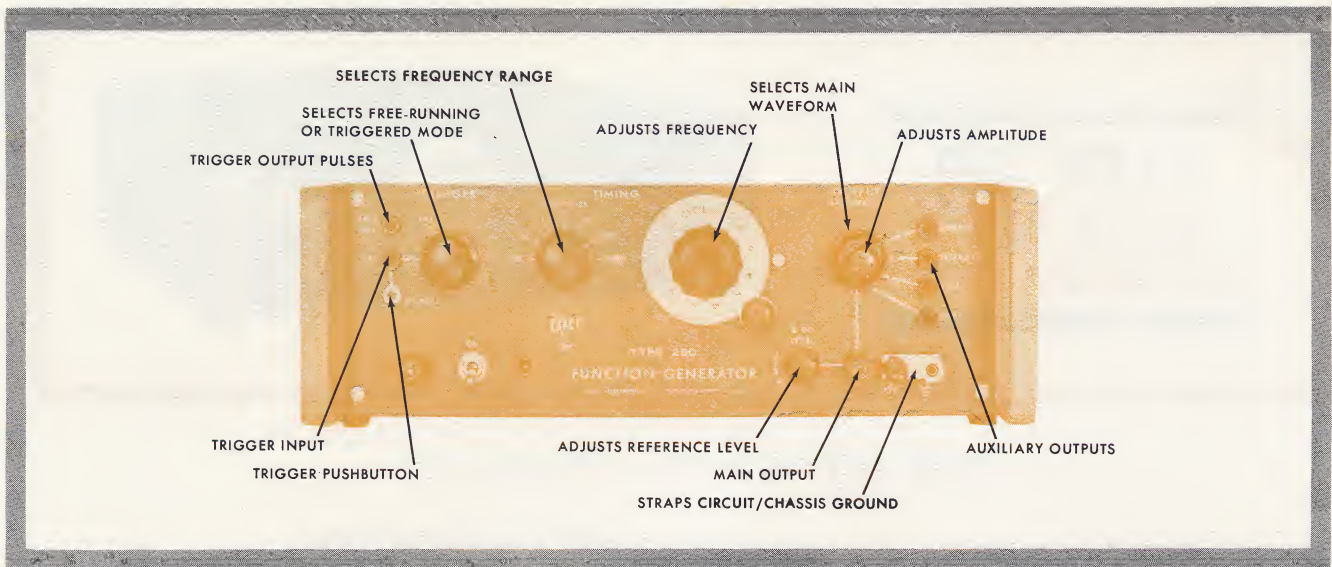
The 250 is 5-1/4" high by 15-1/2" wide, and has a net weight of only 19 pounds. The generator can be supplied in rackmount version (250RM) at no additional cost. Front panel is of dark grey color, with silkscreened white panel designations. End bells and cabinet are medium grey. All exterior finishes are oven baked for durability.

- * SIMULTANEOUS OUTPUTS
- * SQUARE-TRIANGLE-SINE-RAMP
- * 300mv to 25 volts P-P
- * 0.001cps to 10kc
- * TRIGGERED or FREE-RUNNING



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SPECIFICATIONS

MAIN OUTPUT

Amplitude* 300 mv to 25 volts p-p (min)
 25 volts into 5K load
 Stability/Repeatability ... 50 mv (10 min), 300 mv (24 hrs)
 Amplitude Change with Frequency 0.5% to 1 kc
 1% to 10 kc
 Amplitude Change with Function 2% max
 DC Reference Level Range*.....

..... -15 volts or ± 15 volts or switched to 0v
 Frequency Range 0.001 cps to 10 kc
 Frequency Deviation from Absolute 3% max
 Long Term Frequency Stability $\pm 1\%$

EXTERNAL TRIGGERING

Trigger Input Pulse 1 usec risetime (min)
 -10v min amplitude
 less than 1 usec delay from -10v point
 and start of waveform

POWER REQUIREMENTS

Line Voltage 105 to 125 or 200 to 250 vac
 Line Frequency 50 to 400 cps
 Power 150 watts

TRIGGER OUTPUT

Waveform differentiated squarewave
 Amplitude -25v (min)

PHYSICAL CHARACTERISTICS

Weight 19 lbs net, 26 lbs gross
 Volume 2 cu ft gross
 Dimensions 15-1/2w X 5-1/4h X 13d

SQUARE WAVEFORM

Risetime 5 usecs or faster

Symmetry 99.5%
 Overshoot 1% max
 Droop 1% max

TRIANGLE WAVEFORM

Linearity 99.5%
 Symmetry 99.5%

SINE WAVEFORM

Total Distortion ... Less than 2% over entire freq. range

RAMP WAVEFORM

Linearity 99.5%
 Fall Time Less than 6% to 1 kc
 Less than 10% to 10 kc

Dead Time† Less than 6% to 1 kc
 Less than 10% to 10 kc

AUXILIARY OUTPUTS

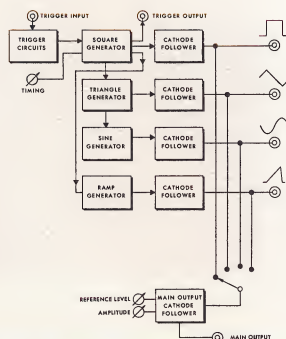
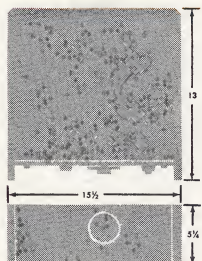
Amplitude* 30 volts p-p (min)
 30 volts into 7K load
 Stability/Repeatability (same as main)
 Amplitude Change with Frequency (same as main)
 DC Reference Level 0 volts (fixed)
 Frequency Range Synchronized with main

* Max Current: 15 ma @ +15 vdc reference level
 3 ma @ -15 vdc reference level

† Ramp dead time can be reduced to less than 1%
 at any one frequency (internal adjustment)

PRICE

F. O. B. Factory \$ 595.00



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See File 2900



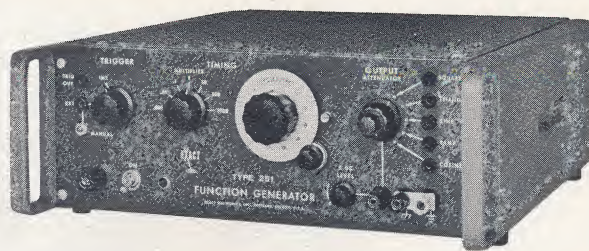
EXACT ELECTRONICS INC.

455 S.E. 2nd Avenue, Hillsboro, Oregon 97123

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TYPE 251 FUNCTION GENERATOR



TYPE 251 FUNCTION GENERATOR

TYPE 251 FUNCTION GENERATOR

This Function Generator can be externally triggered, and produces seven separate outputs simultaneously. Five of the output waveforms - square, triangle, sine ramp and cosine - are fixed amplitude auxiliary outputs. The sixth output (Main) is switched to provide any one of the five function-waveforms with adjustable amplitude and dc reference level. The seventh output is a trigger-output signal for use by associated equipment. In externally triggered mode, one input trigger pulse produces one complete cycle at all seven outputs, simultaneously. The cosine waveform, which leads the sine waveform by 90° , is especially valuable for servo and electro-mechanical work. The square, triangle, sine and ramp waveforms benefit the 251 to serve as a general purpose Function Generator, well suited for circuit design, equipment check-out and calibration, quality control, and other production and systems applications.

SIMULTANEOUS OUTPUTS

All outputs of the 251 occur simultaneously and are synchronized throughout the entire frequency range of the generator. Phase relationship is unique in that the triangle and sine waveform peaks occur at rise and fall points of the square waveform.

MAIN OUTPUT

The main output is switched to any one of the five function waveforms and provides amplitude adjustment from 300mv to over 25 volts p-p. Dc reference level is adjustable from -15 to +15 volts, and is referenced to chassis ground or, by removing a shorting-strap, is referenced to circuit ground which is then isolated from the chassis.

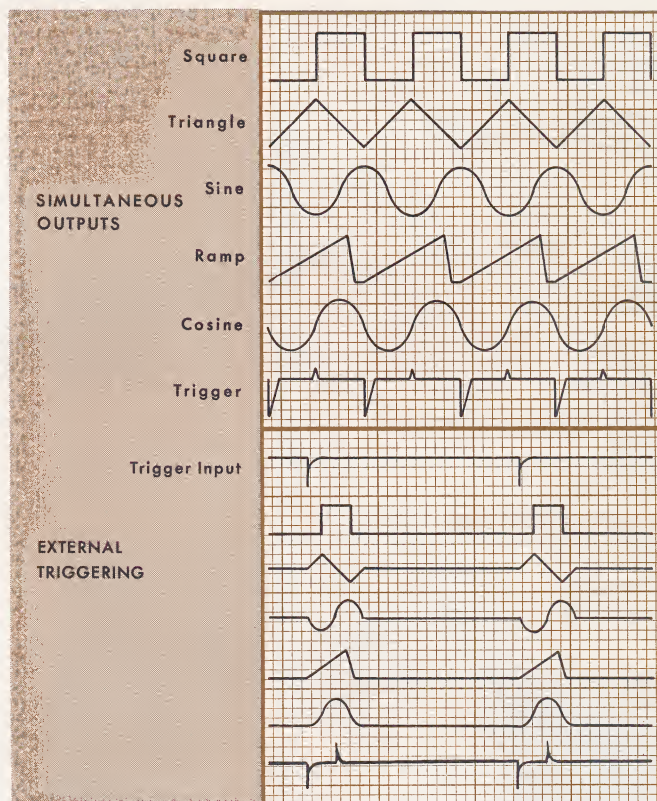
EXTERNAL TRIGGERING

The 251's flexibility is clearly demonstrated when using externally-triggered operation. In this mode, one input trigger pulse produces one complete cycle at all outputs, simultaneously. A pushbutton permits manual triggering of the outputs for one-shot applications. Triggered waveforms are adjustable (timing controls) from 100 usecs to over 16 minutes duration.

PHYSICAL CHARACTERISTICS

The 251 is 5-1/4" high by 15-1/2" wide, and has a net weight of only 20 pounds. The 251 generator can be supplied in rackmount version (251RM) at no additional cost. Front panel is of dark grey color, with silkscreened white panel designations. End bells and cabinet are medium grey. All exterior finishes are oven baked for durability.

- * SIMULTANEOUS OUTPUTS
- * SQUARE-TRIANGLE-SINE
RAMP-COSINE
- * 300mv to 25 volts P-P
- * 0.001cps to 10kc
- * TRIGGERED or FREE-RUNNING

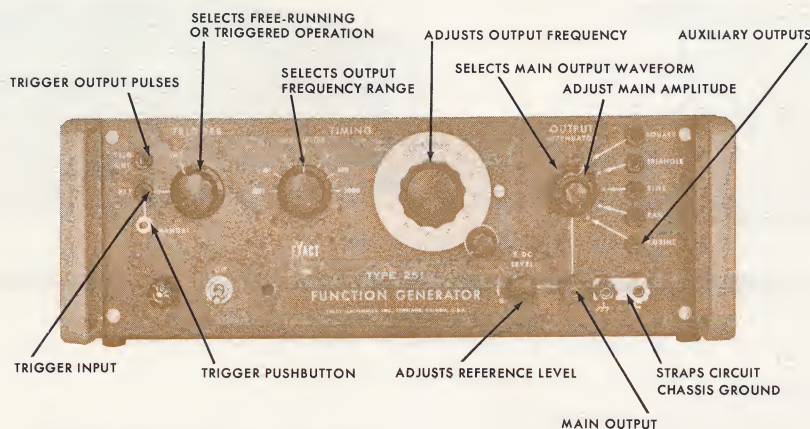


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SPECIFICATIONS

MAIN OUTPUT

Amplitude * 300 mv to 25 volts p-p (min)
 25 volts into 5K load
 Stability/Repeatability ‡ ... 50 mv (10 min), 300 mv (24 hrs)
 Amplitude Change with Frequency ‡ 0.5% to 1 kc
 1% to 10 kc
 Amplitude Change with Function 2% max
 DC Reference Level Range *
 -15 to +15 volts or switched to 0v

Frequency Range 0.001 cps to 10 kc
 Frequency Deviation from Absolute 3% max
 Long Term Frequency Stability ±1%

EXTERNAL TRIGGERING

Trigger Input Pulse 1 usec risetime (min)
 -10 volts amplitude (min)
 less than 1 usec delay from -10v point
 and start of waveform

POWER REQUIREMENTS

Line Voltage 105 to 125 or 200 to 250 vac
 Line Frequency 50 to 400 cps
 Power 150 watts

TRIGGER OUTPUT

Waveform Differentiated squarewave
 Amplitude -25v (min)

PHYSICAL CHARACTERISTICS

Weight 20 lbs net, 27 lbs gross
 Volume 2 cu ft gross
 Dimensions 15-1/2w X 5-1/4h X 13d

SQUARE WAVEFORM

Risetime 5 usecs or faster
 Symmetry 99.5%
 Overshoot 1% max
 Droop 1% max

TRIANGLE WAVEFORM

Linearity 99.5%
 Symmetry 99.5%

SINE WAVEFORM

Total Distortion Less than 2% over entire freq. range

RAMP WAVEFORM

Linearity 99.5%
 Fall Time Less than 6% to 1 kc
 Less than 10% to 10 kc
 Dead Time † Less than 6% to 1 kc
 Less than 10% to 10 kc

COSINE WAVEFORM

Total Distortion Less than 2% over entire freq. range

AUXILIARY OUTPUTS

Amplitude * 30 volts p-p (min)
 30 volts into 7K load
 Stability/Repeatability (same as main)
 Amplitude Change with Frequency (same as main)
 DC Reference Level 0 volts (fixed)
 Frequency Range Synchronized with main

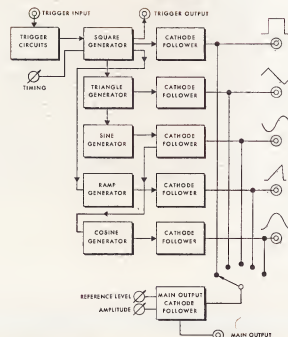
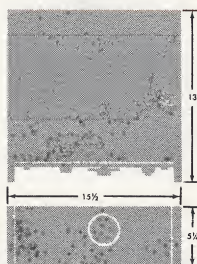
* Max Current 15 ma @ +15vdc reference level
 3 ma @ -15vdc reference level

† Ramp dead time can be reduced to less than 1% at any one frequency (internal adjustment).

‡ Main Output amplitude and reference level stability is somewhat broader when cosine waveform is selected. If cosine requirements are critical, consult factory for exact tolerances.

PRICE

F.O.B. Factory \$ 685.00



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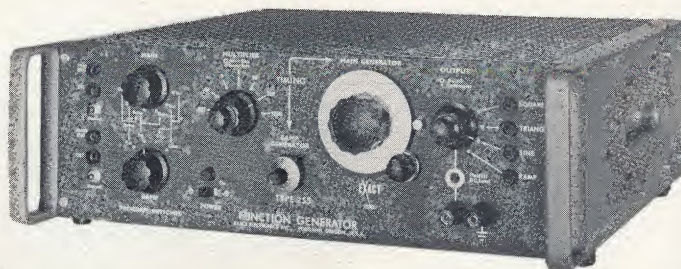
EXACT ELECTRONICS INC.

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TYPE 255 FUNCTION GENERATOR



TYPE 255 FUNCTION GENERATOR

- * SEPARATE RAMP TIMING
- * SIMULTANEOUS OUTPUTS
- * SQUARE-TRIANGLE-SINE-RAMP
- * 0 to 25 VOLTS P-P
- * 0.001 CPS to 10 KC
- * TRIGGER/GATE/DELAY MODES

TYPE 255 FUNCTION GENERATOR

The Type 255 is the most flexible of Exact Function Generators. Basically, it consists of two completely independent generators ... a MAIN generator which produces simultaneous square, triangle and sine waveforms, and a RAMP generator which produces ramp waveforms. The two generators have separate timing and multiplier (frequency) controls. The MAIN generator can be externally triggered and provides a separate trigger output signal. The RAMP generator can also be externally triggered and provides a trigger output (GATE) signal. Two mode switches interconnect input/output trigger waveforms between both generators, providing many gating, pulsing, and delaying modes of operation. The 255 is ideally suited as a general purpose instrument in laboratories where flexibility is a must ... where free-running, pulsed, burst and other waveform patterns are required.

SEPARATE RAMP GENERATOR

Separate frequency controls allow independent adjustment of ramp time base from 100 usecs to over 16 minutes. The ramp generator can be operated free-running, externally triggered, or triggered by the main generator. When the ramp is triggered by the main generator, ramp duration and off-time between ramp waveforms are separately adjustable.

TRIGGER/GATE/DELAY OPERATION

The 255 provides many different modes of triggered, gated and delayed operation. Figures three through nine show some of the available outputs. Either generator (main or ramp) can be externally triggered and the output used to delay-trigger the other generator. Also, the ramp generator can gate the main generator to produce a burst of square, triangle, and sine waveforms.

MAIN OUTPUT

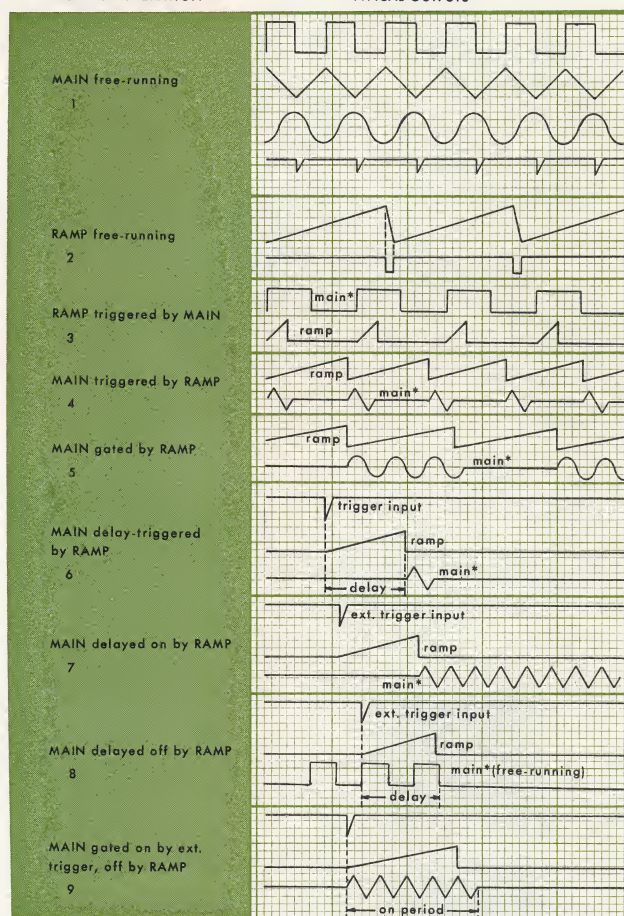
The main output is switched to provide square, triangle, sine or ramp waveforms with amplitude adjustable from 0 to over 25 volts p-p. Dc reference level is fixed at 0 volts, and is the center of the square, triangle and sine waveforms and the base of the ramp waveform. The HOLDOFF DC LEVEL control permits shifting the starting point of triggered sine and triangle waveforms from 0° to more than 170° (triggered and gated waveforms are completed at 360° from the starting point).

PACKAGING

The 255 is 5-1/4" high by 16-3/4" wide, and weighs only 21 lbs net. The 255 can be supplied in rackmount version (255RM) at no additional cost. Front panel is dark grey in color, with silk-screened white callouts. End bells and cabinet are medium grey. All exterior finishes are oven baked for durability.

MODE OF OPERATION

TYPICAL OUTPUTS

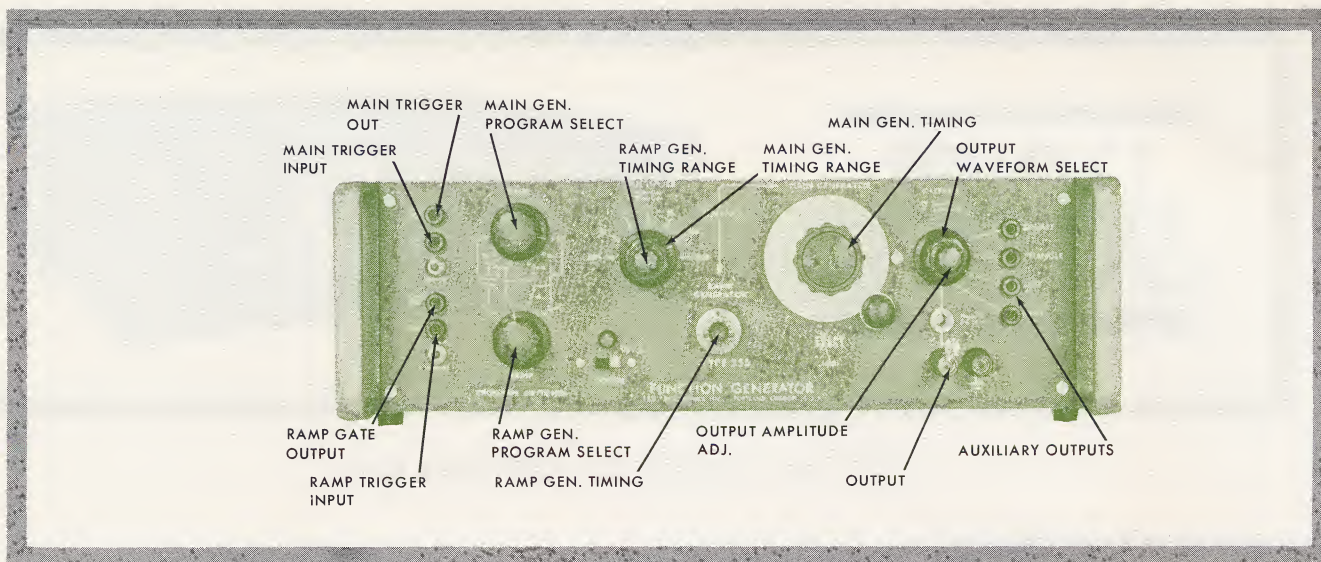


*MAIN output can be either square, triangle or sine waveforms



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SPECIFICATIONS

MAIN OUTPUT

Amplitude 0 to 25 volts p-p (min)
 25 volts into 5K load
 Stability/Repeatability 50 mv (10 min), 300mv(24 hrs)
 Amplitude Change with Frequency 0.5% to 1 kc
 1% to 10 kc
 Amplitude Change with Function 2% max
 DC Reference Level 0 volts
 Frequency Range 0.001 cps to 10 kc
 Frequency Deviation from Absolute 3% max
 Long Term Frequency Stability $\pm 1\%$

EXTERNAL TRIGGERING

Trigger Input Pulse 1 usec risetime (min)
 -10v min amplitude
 less than 1 usec delay between
 -10v point and start of waveform

TRIGGER OUTPUT

Waveform differentiated squarewave
 Amplitude -25 volts(min)

GATE OUTPUT

Amplitude 35 volts
 Frequency Synchronized with ramp

POWER REQUIREMENTS

Line Voltage 105 to 125 or 200 to 250 vac
 Line Frequency 50 to 400 cps
 Power 175 watts

PHYSICAL CHARACTERISTICS

Weight 21 lbs net, 28 lbs gross

Volume 2 cu ft gross
 Dimensions 16-3/4w X 5-1/4h X 13d

SQUARE WAVEFORM

Risetime 5 usecs or faster
 Symmetry 99.5%
 Overshoot 1% max
 Droop 1% max

TRIANGLE WAVEFORM

Linearity 99.5%
 Symmetry 99.5%

SINE WAVEFORM

Total Distortion Less than 2% over entire
 frequency range

RAMP WAVEFORM

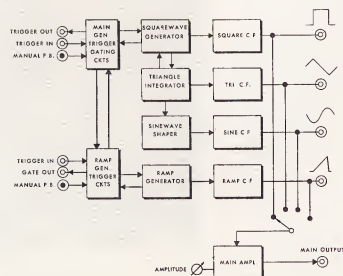
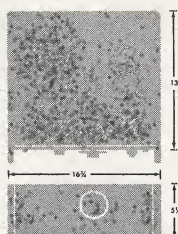
Linearity 99.5%
 Fall Time 1% to 5 kc
 1.5% to 10 kc
 Timing Dial Accuracy $\pm 1\%$ of absolute
 Dead Time Less than 0.1% of period

AUXILIARY OUTPUTS

Amplitude 30 volts p-p (min)
 30 volts into 7K load
 Stability/Repeatability Same as main
 Amplitude Change with Frequency Same as main
 DC Reference Level Same as main
 Frequency Range Same as main

PRICE

F.O.B. Factory \$ 785.00



For the location of your
 nearest representative,
 consult Electronic Engineers
 Master.

eem File 2900



EXACT ELECTRONICS INC.

455 S.E. 2nd Avenue, Hillsboro, Oregon 97123

Telephone (503) 648-6661

TWX: 503-821-6927

STANDARD CATALOG MODIFICATIONS

Mod. #	PRICE	DEL. ADD	DESCRIPTION
01	\$35 (240-250-251) \$50 (255) \$75 (301)	2 WEEKS 2 WEEKS 2 WEEKS	<u>ZERO OUTPUT</u> - LESS THAN 100MV OUTPUT WITH DC COMPENSATION. INCORPORATES $\pm$ DC BALANCE FEATURES ON TYPES 255 AND 301
02	\$65	2 WEEKS	<u>GATE MODIFICATION</u> - COMBINES THE FEATURES OF GATED AND TRIGGERED OPERATIONS AND OFFERS BOTH.
03	\$35 (TYPE 240) \$65 (TYPE 250) \$75 (TYPE 255) \$65 (TYPE 301)	2 WEEKS 2 WEEKS 2 WEEKS 2 WEEKS	<u>TIMING 10X SLOWER</u> - THIS MODIFICATION SHIFTS THE TIMING RANGE FROM .001cps-10KC TO .0001cps-1KC.
04	\$20	2 WEEKS	<u>REAR OUTPUTS</u> - THIS MODIFICATION EXTENDS NORMAL FRONT PANEL OUTPUTS TO THE REAR OF THE UNIT TERMINATING ON A CINC-H-JONES TYPE BARRIER STRIP.
05	\$50	2 WEEKS	<u>BALANCED OUTPUT</u> - THIS MODIFICATION GIVES A BALANCED PUSH-PULL OUTPUT FOR THE MAIN OUTPUT ONLY.
06	\$10	2 WEEKS	<u>SPECIAL PAINTED PANELS</u> - CUSTOMER SUPPLIES PAINT TO BE USED OR FEDERAL CODE NUMBER.
07	N/C	2 WEEKS	<u>EXPORT VOLTAGE</u> - 220, 230 OR 234 VOLTAGE MUST BE SPECIFIED BY CUSTOMER.
10	N/C	1 WEEK	<u>RACKMOUNT PANELS</u> - CONNECTS ALL UNITS TO 19" RACK MOUNT.
11	\$75 \$105 (TYPE 255)	2 WEEKS 2 WEEKS	<u>SLIDE MOUNT</u> - AVAILABLE ONLY ON RACKMOUNTED INSTRUMENTS.

STANDARD CATALOG MODIFICATIONS ARE AVAILABLE AS FOLLOWS:

TYPE 240 -- 01, 03, 04, 05, 06, 07, 10 AND 11.

TYPE 250 -- 01, 02, 03, 04, 05, 06, 07, 10 AND 11

TYPE 251 -- 01, 02, 04, 05, 06, 07, 10 AND 11

TYPE 255 -- 01, 03, 04, 05, 06, 07, 10 AND 11

TYPE 301 -- 01, 03, 07 AND 10.

NOTE: COMBINATIONS OF CATALOG MODIFICATIONS OTHER THAN THE ABOVE AND CUSTOMER ORIENTED MODIFICATIONS (99 TYPE MODIFICATIONS) ARE AVAILABLE UPON REQUEST. PRICES AND SHIPMENT MUST BE NEGOTIATED WITH THE FACTORY.

3-65

EXACT ELECTRONICS, INC.

BOX 160

HILLSBORO, OREGON 97123

PHONE 503 648-6661
TWX 503 821-6927

STANDARD CATALOG INSTRUMENT

PRICE LIST

MARCH, 1965

FUNCTION GENERATORS

TYPE 240 AND 240RM	\$475.00
TYPE 240M AND 240MRM	510.00
TYPE 250 AND 250RM	595.00
TYPE 251 AND 251RM	685.00
TYPE 255 AND 255RM	785.00
TYPE 301 AND 301RM	550.00

SYNTHESIZER & PLUG-INS

TYPE 200 AND 200RM	1925.00
TYPE B	500.00
TYPE C	350.00
TYPE D	400.00
TYPE E	350.00
TYPE F	350.00

ALL PRICES F.O.B. HILLSBORO, OREGON

EXACT ELECTRONICS

TYPE B

TENTATIVE SPECIFICATIONS

MAIN OUTPUT

AMPLITUDE	VARIABLE 5 TO 50V P-P
CENTER REFERENCE LEVEL	-10 TO +10V DC INTERNAL ADJUSTMENT
OUTPUT CURRENT (CATHODE FOLLOWER)	5MA
INTERNAL IMPEDANCE (50 VOLTS INTO 6K)	LESS THAN 200 OHMS
SLOPE (NO EXPANSION)	$\frac{DV}{DT} = \frac{50V}{2 \text{ INCREMENTS}}$
AMPLITUDE STABILITY/REPEATABILITY	5% (WITH CONSTANT LINE VOLTAGE)
WIDTH PER INCREMENT, DYNAMIC RANGE	3.3 μ SEC TO 10 SEC.
EXPANSION PER INCREMENT	VARIABLE 1 TO 10 TIMES MIN. (INTERNAL ADJ.)
TIME/INCREMENT ACCURACY	WITHIN 3% (CALIBRATED POS.)

TRIGGER OUTPUTS

SCALE OF TEN	GATE -35 VOLTS P, START OF EACH ROW
TRIGGER OUT	GATE -20 VOLTS P, START OF EACH PROGRAM
NOTE: SCALE OF TEN TRIGGER IS USED ONLY WHEN ONE ROW IS BEING USED.	

TRIGGERING

FREE RUNNING	
MANUAL/EXTERNAL	ONE INCREMENT PER TRIGGER, OR TEN INCREMENTS (BY ROWS) PER TRIGGER, OR FIFTY INCREMENTS (COMPLETE PROGRAM) PER TRIGGER.

MONITOR OUT

MONITORS MAIN OUTPUT - HIGH IMPEDANCE USE OSCILLOSCOPE ONLY.

PRIMARY AND SECONDARY MATRIX

RISETIME/INDIVIDUAL INCREMENT	0.75 μ SEC
FALLTIME/INDIVIDUAL INCREMENT	0.75 μ SEC
AMPLITUDE	0 TO 10 VOLTS MINIMUM
NUMBER OF INCREMENTS	0 TO 50

NOTE: PRIMARY MATRIX AMPLITUDE INCREASES WHEN EXPANDING, WHILE THE SECONDARY MATRIX AMPLITUDE REMAINS CONSTANT.

WHEN THE TYPE "B" VARIABLE SLOPE/VARIABLE WIDTH PLUG-IN IS USED WITH THE BASIC TYPE 200 WAVEFORM SYNTHESIZER, THE OUTPUT IS A SEQUENCE OF SLOPES AND AMPLITUDES ALLOWING AN UNLIMITED VARIETY OF WAVEFORM CONFIGURATIONS. FOUR PARAMETERS ARE VARIABLE. (1) THE INDIVIDUAL AMPLITUDE OF EACH INCREMENT. (2) THE INDIVIDUAL SLOPE OF EACH INCREMENT. (3) THE INDIVIDUAL DURATION OF EACH INCREMENT. (4) THE DURATION OF ALL INCREMENTS AS A GROUP. THE OUTPUT CAN BE SWITCHED TO CONTAIN 10, 20, 30, 40 OR 50 INCREMENTS. THE COMPLETED WAVEFORM CAN BE SET AT AN OUTPUT REFERENCE LEVEL BETWEEN -10 VOLTS AND +10 VOLTS BY THE INTERNAL ADJUSTMENT OF THE "SLOPE OUTPUT LEVEL."

PRIMARY AND SECONDARY MATRIX OUTPUTS PROVIDE TWO GROUPS OF INDIVIDUALLY ADJUSTABLE VOLTAGE LEVELS. THE SECONDARY MATRIX OUTPUT PRODUCES PULSES OF VARIABLE AMPLITUDE (RED KNOBS) AND VARIABLE WIDTH (BLACK KNOBS). THE PRIMARY MATRIX PROVIDES PULSES WHOSE AMPLITUDE AND WIDTH ARE SIMULTANEOUSLY VARIABLE (BLACK KNOBS). EACH INCREMENT CAN BE MANUALLY TRIGGERED OR TRIGGERED AT AN EXTERNAL RATE. FACILITIES FOR TRIGGERING OF INDIVIDUAL ROWS OF 10 SEQUENTIALLY OR A PROGRAM OF 20 THROUGH 50 INCREMENTS MANUALLY OR AT AN EXTERNAL RATE ARE ALSO PROVIDED.